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MECHANICS.

351. **Proposed by J. G. ROSE, B. A. (Oxion), Mt. Angel College, Oregon.**

ABC is a uniform triangular lamina of weight $3W$ such that $AB=2AC$. A particle of weight W is attached to it at C. Show that if the lamina be suspended from angle A, it will rest with AB and AC equally inclined to the vertical.

352. **Proposed by G. B. M. ZERR, A. M., Ph. D., Philadelphia, Pa.**

Assuming the earth's orbit to be a circle, if a comet move in an ellipse around the sun, in the same plane as the earth, with its perihelion nearer the sun than the earth, how long will it remain within the earth's orbit? Apply this to Halley's comet with the above assumptions, and supposing the eccentricity of its orbit to be 0.971733. Find its periodic time.

353. **Proposed by W. J. GREENSTREET, M. A., Editor, The Mathematical Gazette, Stroud, England.**

R_1 and R_2 are ranges on a horizontal plane of particles projected with given velocity from A on the plane to pass through B. Show that $a(R_1+R_2)-R_1R_2=\frac{a^4}{c^2}$, where $c=AB$ and a is the horizontal projection of AB.

NUMBER THEORY AND DIOPHANTINE ANALYSIS.

175. **Proposed by H. C. FEEMSTER, A. B., Professor of Mathematics, York College, York, Nebraska.**

Show (a) that $[(2n)!]/[(n+1)!n!]$ is an integer, and (b) that $[(2a)!(2b)!]/[a!b!(a+b)!]$ is an integer.

AVERAGE AND PROBABILITY.

206. **Proposed by G. B. M. ZERR, A. M., Ph. D., Philadelphia, Pa.**

A point O is taken at random in a triangle. What is the probability that if three other points are taken at random, one shall lie in each of the three triangles AOB, BOC, and COA? [Williamson's *Integral Calculus*, page 412, ex. 85.]

207. **Proposed by JOSEPH V. COLLINS, Ph. D., State Normal School, Stevens Point, Wisconsin.**

A formula for simple interest is, $i=prt/12$. If r is 5 or 7, what is the chance that the denominator will cancel out entirely into either p or t or both (where t is expressed in months and tenths of a month, written decimally with usually a common fraction after tenths). It is assumed that a factor of 12 can cancel into t if the integral part is divisible by 2, 3, or 4. Thus, to find the interest at 5% on $729.44 for 1 year, 9 months, 28 days, we write

$$1.8236\times5\times\frac{21.9\frac{1}{3}}{12}=?$$

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NOTES AND NEWS.

The August-September number of the MONTHLY will be published September 28th.

At the University of Pennsylvania hereafter the chairman of each department of instruction will be elected annually by the department. For the year 1910-1911, Professor George Egbert Fisher has been chosen chairman of the Department of Mathematics in the Graduate School, and Professor Isaac J. Schwatt chairman of the Mathematical Deparmennt in the College.

In the Department of Mathematics at the University of Pennsylvania Assistant Professor G. H. Hallett has been promoted to a professorship and Dr. M. J. Babb, Dr. G. G. Chambers and Dr. O. E. Glenn have been promoted to instructorships.

At Purdue University Professor Erastus Test will retire at the close of the present academic year, and Professor Jacob Westlund has been promoted to a full professorship in mathematics.

The series of articles on the teaching of collegiate mathematics, which was closed for the present year with the paper by Professor Bailey in the last issue, is appropriately supplemented in this number by Professor Miller's paper on "Mathematics Beyond the Calculus," which is intended primarily for students but which should prove equally valuable to many teachers. There are already indications that this series of papers will bear fruit in further discussions, through these columns, of many important phases of the educational side of mathematics, which deserves careful reconsideration.

Mr. T. H. Hildebrandt, who is instructor in mathematics at the University of Michigan, has just completed his work for the Doctorate at the University of Chicago by presenting his thesis on "A contribution to the Foundations of Frechet's Calcul Fonctionnel." The degree was conferred at the convocation on June 14, 1910.

"The Absolute Minimum of a Definite Integral in a Special Field" is the title of the thesis presented by Mr. E. J. Miles for the Doctorate at the University of Chicago. Dr. Miles has been appointed to an instructorship at Cornell University.

Miss Marion B. White has received an appointment as assistant professor of mathematics at the University of Kansas. Miss White was formerly instructor at the University of Illinois, which position she left to pursue graduate work at the University of Chicago.

Dr. Elizabeth R. Bennett has been appointed instructor in mathematics at the University of Nebraska, and not at the University of Kansas as previously announced in these columns.

Mr. J. O. Pyle, professor of mathematics at Howard Payne College, Texas, has resigned to pursue advanced work at the University of Chicago.

Dr. R. C. Archibald, of Brown University, has spent the year 1909-10, on leave of absence, studying in Paris. He returns next year as assistant professor of mathematics.

Mr. H. C. Currier, instructor in mathematics at Brown University, has leave of absence for the coming academic year. He will spend the year in study in German universities.

Dr. Phillips, instructor in mathematics at the Massachusetts Institute of Technology, is attending lectures at the University of Chicago during the present Summer.

Professor F. S. Woods, of the Massachusetts Institute of Technology, will resume his duties in the autumn, after a year's absence in Europe.

Mr. C. J. West, fellow in mathematics in the University of Illinois, has been appointed instructor in mathematics in the University of Ohio.

Mr. Benjamin Carter, of the Massachusetts Institute of Technology, has been appointed instructor in mathema,ics at Colby College, Maine.

Professor G. A. Miller will teach in the summer session at the University of Illinois.

Dr. O. D. Kellogg, of the University of Missouri, has been promoted to a full fellowship in mathematics.

Mr. R. P. Baker, instructor in mathematics at the University of Iowa, has been promoted to an assistant professorship.

Professor E. H. Moore will spend six weeks in Colorado and return to lecture at the University of Chicago during the second term of the summer quarter.

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BOOKS.

First Course in Algebra. By Herbert E. Hawkes, Assistant Professor of Mathematics in Yale University, William A. Luby, and Frank C. Touton, Instructors in Mathematics, Central High School, Kansas City, Mo. 12mo, cloth, vii+334 pages, list price $1.00. Boston and Chicago: Ginn & Co.

"The 'First Course in Algebra' is designed for the first year's work. The topics considered have been strictly limited to those which belong primarily to study in the first year. Many helpful suggestions, the fruit of the widespread discussion of mathematical teaching which has marked the progress of the past ten years, are embodied in the book.

Difficult exercises have been avoided. Those given are new, varied, graded with extreme care, and amply sufficient to develop the essentials of elementary technic. The principles, so far as possible, are developed from the student's knowledge of arithmetic.